

UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF NORTH CAROLINA
1:12-cv-1020

HEART IMAGING TECHNOLOGIES,)
LLC,)

Plaintiff,)

v.)

MERGE HEALTHCARE)
INCORPORATED,)

Defendant.)

DECLARATION OF
STEVEN TOLLE

STEVEN TOLLE declares as follows:

INTRODUCTION

1. I am an adult; I reside in Evanston, IL. Since 2011, I have been employed by Merge Healthcare Incorporated ("Merge"). A copy of my curriculum vitae, containing an accurate and current description of my education and work experience, is attached as **Exhibit 1**.

2. My job responsibilities at Merge have included setting product strategy and defining product investment priorities. As part of such work, I have become familiar with the following:

- a. The nature and operation of Merge's iConnect Access and Merge Honeycomb Image Sharing products, as well as other Merge products.

- b. The markets for each of Merge's products and Merge's competitors in each of the markets, including the nature of the competing products that Merge's competitors sell in each market.
- c. Merge's customers and potential customers in each of the markets; the preferences and characteristics of potential customers in each market; and methods for selling in each market.
- d. Merge's financial records including records of profits, losses, revenues and expenses.

3. I understand that Heart Imaging Technologies ("HIT") has filed the above lawsuit ("Lawsuit") against Merge and has asked the Court to temporarily enjoin Merge from making and selling Merge's iConnect Access product (formerly known as WebAccess) and Merge's Honeycomb Image Sharing product because those products allegedly infringe claim 1 of HIT's U.S. Patent No. 8,166,381 ("381 Patent").

4. In order to succeed in the markets in which it offers products, Merge monitors the activities of its competitors in those markets and collects as much information as possible about its competitors. These markets include the markets for iConnect Access and Merge Honeycomb Image Sharing. Obtaining, collecting and analyzing this information is an important part of my job.

5. Merge also makes extensive efforts to obtain information from its customers and potential customers about what features of its products they find desirable and undesirable. This includes extensive customer feedback regarding

iConnect Access and Merge Honeycomb Image Sharing. Obtaining, collecting and analyzing this information is an important part of my job.

MERGE'S "I CONNECT ACCESS" PRODUCT

6. Merge's iConnect Access product is a "zero-download" medical image viewer which allows users to view medical images in a browser. iConnect Access is primarily used by referring physicians, who refer patients to hospitals or imaging centers for diagnostic imaging, to view both the radiology report and the image. This would include any physician that refers a patient for diagnostic imaging. Merge customers make iConnect Access available to their community of physicians to enable collaboration and care coordination.

7. When using the term "zero-download," I mean simply that iConnect does not generally require an end user to download software onto their computer to use the product. In using the term "zero-download," I am making no additional representations as to the actual technical functionality of iConnect or all the software required for iConnect to function.

Sales

8. Merge has offered iConnect Access for sale continuously since 2009. The total number of iConnect Access customers, and gross license sales of iConnect Access over the past several years are as follows:

Year	iConnect Access – number of customers	iConnect Access – Gross license sales
2009		
2010		

2011		
2012		

9. Merge offers iConnect Access for sale in conjunction with other products, including iConnect Share, iConnect Enterprise Archive, Merge PACS, Merge RIS and Merge Referring Physician Portal (MRP). Many customers use these products together, as a package. iConnect Access is also sold as part of the Merge Orthopedics PACS solution, to ensure that Orthopedic surgeons have access to images when working in remote hospitals or offices.

Marketing

10. The market in which Merge sells iConnect Access is the market for image management systems having a web-based medical image viewer ("Viewer Market").

11. The Viewer Market is worldwide, with many vendors other than Merge and HIT.

12. The Viewer Market contains a wide variety of medical image viewers, including both viewers that are "zero-download," and viewers that require a software download by the end user.

13. When marketing iConnect Access to potential customers, Merge often faces direct competition from vendors offering viewers that require a software download by the end user. For example, in 2012 Merge's iConnect

Access product competed for sales with the following vendors that offer a viewer requiring a software download by the end user¹:

- a. Fuji (Synapse viewer) at Flowers Hospital in Dothan, Alabama and Long Island College Hospital in Brooklyn, New York;
- b. Scimage (PICOM PACS) at St. Francis Hospital in Tulsa, Oklahoma;
- c. Internally designed viewer at University of Pittsburgh Medical Center in Pittsburgh, Pennsylvania;
- d. DR Systems (Unity Pacs) at Radiology Associates of Sacramento in Sacramento, California;
- e. MedStrat (Echoes) at numerous orthopedic sites, including Illinois Bone and Joint (IBJI);
- f. McKesson (Horizon Medical Imaging PACS) at numerous sites including Aurora Healthcare in Wisconsin and Huntington Hospital in Pasadena, California; and
- g. Philips Healthcare (iSite / IntelliSpace PACS) at St. Mary's Duluth and the whole of Essentia Health.

14. Therefore, Merge considers vendors offering viewers that require a software download by the end user to be direct competitors of Merge, and other vendors offering "zero-download" viewers, in the Viewer Market.

¹ This is not a complete sample of all instances in 2012 when Merge's iConnect Access product competed for a sale with a viewer requiring a software download by the end user.

15. The following companies make substantial sales of medical image viewers, and based on information that Merge has obtained about these companies, Merge views them as the primary competitors in the Viewer Market:

- a. Calgary Scientific Inc. of Calgary, Alberta, Canada;
- b. Client Outlook Inc. of Waterloo, Ontario, Canada;
- c. Vital Images, Inc. of Minnetonka, Minnesota;
- d. TeraRecon, Inc. of Foster City, California;
- e. Agfa Healthcare Corp. of Greenville, South Carolina;
- f. Carestream Health, Inc. of Rochester, New York;
- g. GE Healthcare (a division of General Electric Company);
- h. Siemens Healthcare (a division of Siemens AG);
- i. Fuji Medical of Fujifilm USA;
- j. ScImage, Inc. of Los Altos, California;
- k. McKesson of San Francisco, California;
- l. Cerner of Kansas City, Missouri;
- m. Infinitt of Philipsburg, New Jersey;
- n. Intelrad of Montreal, Quebec;
- o. Medical Insight, Inc. of Denmark;
- p. Sectra Medical Systems of Linkoping, Sweden;
- q. Aware, Inc. of Bedford, Massachusetts;
- r. DR Systems of San Diego, California;
- s. Teramedica of Milwaukee, Wisconsin;

- t. Clarontech of Ontario, Canada;
- u. LeadTools of Charlotte, North Carolina;
- v. Osirix open source viewer;
- w. Clear Canvas of Toronto, Ontario, Canada;
- x. Novarad of American Fork, Utah;
- y. Brit Systems of Dallas, Texas; and
- z. Philips Healthcare of Andover, Massachusetts.

16. These companies represent only a small number of the competitors in the Viewer Market. There are over 150 other vendors as well as open source projects that offer competing products in the Viewer Market.

17. Of the many medical image viewers available in the Viewer Market, at least the following viewers can be considered "zero-download":

- a. Carestream Vue Motion;
- b. Client Outlook eUnity;
- c. ScImage PicomWeb;
- d. Teramedica Univision;
- e. Clarontech Nil;
- f. Medical Insight EazyViz;
- g. Calgary Scientific PureWeb, Resoluton MD;
- h. Vital Images Vitrea View;
- i. GE Healthcare Centricity Clinical Archive Clinical Viewer;
- j. Siemens Image Sharing and Archiving ;

- k. Philips Intellispace Portal;
- l. Brit Roentgen Cloud; and
- m. Intelera Intellect.

18. Based on information acquired about its competitors, my best estimate is that Merge presently accounts for approximately percent of all sales of "zero download" viewers in the Viewer Market.

19. Thus, Merge is one of many vendors in the Viewer Market and has a relatively small market share.

20. Merge does not consider HIT to be a well-established supplier in the Viewer Market, nor one of the primary competitors in that market. I cannot recall an instance where HIT has been raised as a potential competitor for a sale.

Desirability of Features

21. Based on Merge's extensive efforts to determine which features of iConnect Access that Merge customers find most desirable and attractive, I believe that the features which drive sales of iConnect Access include:

- a. Ability to integrate with electronic medical record (EMR) systems, such as Epic, with full patient and study context and user single sign on;
- b. Ability to integrate with multiple PACS vendors using not only DICOM Query and Retrieve, but also IHE/DICOM WADO (Integrating the Healthcare Enterprise Web Access to DICOM Objects profile)

- c. Ability to directly integrate with Legacy Merge products, including Immedia Archive, Fusion PACS, Fusion RIS/PACS MX, Amicas PACS, Merge PACS, iResponse, iStore PACS server, Databridge (report repository), and MergePort (report repository), via proprietary methods to overcome the shortcomings and enhance the performance of these older systems;
- d. Integrated offering with Merge's VNA (Vendor Neutral Archive) and iConnect Share to image enable non-DICOM sources and convert them to DICOM. It is important to note that the image viewing and uploading are commonly intertwined in a single user session;
- e. Ability to integrate as a viewing component via a rich API (Application Programming Interface) where the viewer is used as a component of an EMR (Electronic Medical Records system) or HIS (Hospital Information System), notably used for seamless viewing of the images as part of the "patient's chart" and in the context of the imaging study report. This is most commonly used by physicians including surgeons, Intensivists, General Practitioners, and others;
- f. The ability to integrate with an EMPI (Enterprise Master Patient Index) whether used in a large IDN (Integrated Delivery Network – Group of related hospitals and clinics) or HIE (Health Information Exchange) so that all of the patients' identities (individual facility

specific medical record numbers) are used for queries / lookups and display in the patient history and are viewable together so that prior studies performed at other facilities can be viewed along side of the current study images;

- g. Ability to quickly view an entire patient history of the prior studies, including both reports and images. The reports are important to help determine which study to use in the side by side comparison;
- h. Side by side comparison of current and prior studies which is important for judging the clinical progression of the patient (e.g tumor growth or bone fracture healing);
- i. Linked scrolling of current and prior imaging studies, allowing hundreds or thousands of individual image slices which are gathered during a CT or MR exam to be displayed as a "stack" and synchronized for comparison between either a current and prior study (e.g. to look at tumor growth);
- j. A rich measurement toolkit including orthopedic specialty tools. These measurement tools include distance, leg length measurements, angles, areas, pixel values and other clinical measurements important for quantitative values for diagnosis;
- k. Proven industry compatibility and support of the DICOM and IHE (Integrating the Healthcare Enterprise) standards as proven by participation in the annual IHE Connectathons. The Connectathons

are an important annual event where competitors gather on "neutral turf" to test the compatibility and interoperability of their products, and compliance of these product with the DICOM standards;

- l. High level of system scalability and reliability as proven by customer references and large scale installations, preferably at the IDN level;
- m. Distributed architecture featuring dispersed or federated rendering servers which may encompass a multi-hospital, multi-state or even national system with rendering servers that are collocated with the source PACS or VNA. This is important as the resulting web images transfer far more rapidly over the internet than the original size DICOM images;
- n. Federated queries to multiple source PACS or VNA systems to allow simultaneous querying of these various sources without the need for the user knowledge of the location of the study (geographically or physically on which PACS). This is important for systems where there are multiple source PACS systems and where the integrated delivery network (IDN) covers multiple hospitals and clinics, often in a multi-state region;
- o. Ability to display images directly from multiple PACS systems without the need for a server cache (true "on demand" viewing). This is important to avoid having to duplicate the storage of all or

part of the PACS systems as well as the associated headaches of maintaining synchronization of the sources and the cached images in case of edits, deletions, demographic or name changes, or other changes, which causes major administrative headaches;

- p. Large installed base of high profile customers of Merge products some of which have thousands of users;
- q. The ability to download study images and reports to a client PC or to a remote PACS system. Often viewing of the images and reports is the first step and the next step is to have a local copy. This is especially important for referring specialist physicians and surgeons (such as ortho surgeon that wants a copy in surgery);
- r. The ability to perform a diagnostic reading of images when used on a proper monitor meeting FDA (Food and Drug Administration) and ACR (American College of Radiology) requirements which is important for home reading (such as emergency studies in the middle of the night) or when the reading physician is travelling;
- s. Multi-up display (display of multiple images and studies simultaneously) on a single monitor;
- t. Ability to display and Create DICOM GSPS (grey scale presentation states) and key objects, for viewing in Access, as well as storage back to the source PACS or VNA allowing availability on other systems and viewers. These presentation states and key objects are

the industry standard means of annotating images (e.g. adding measurements, arrows text) and the key objects are the “most important” images of the studies that are commonly referenced in a report and viewed by the referring physician;

- u. Ability to attach other documents (uploaded via the access client), store them to the archive and display them later;
- v. Use as an IHE XDS (Integrating the Healthcare Enterprise Cross Enterprise Document Sharing) viewer of not just images but also documents such as lab results and reports which is especially important in research, and HIEs (Healthcare Information Exchanges). These are regional and state wide systems for sharing healthcare information. The XDS standards provide the means of doing the interchange between institutions and systems;
- w. Ability to launch other viewers within patient, study and user context (such as Merge PACS, CAD , Orthopedic Templating such as Merge OrthoCase, Cardio WEB) when more advanced viewing or templating or treatment planning tools are required;
- x. PDF conversion and incorporation of the DICOM SR or other source reports for display as a “pretty report” and download to a local workstation or EMR;
- y. Image sharing for users either with or without an account (email link and sharing functionality);

- z. Integrated user interface with iConnect Share;
- aa. Advanced multi-tenant user management and LDAP (LightWeight Directory Access Protocol) / Migrosoft Active Directory integration for multiple domains. This is important for centralized user management and to enable users to have a single user name and password that is used in multiple systems (e.g EMR, PACS, email, etc) ;
- bb. Multi-tenant operation and segregation of studies and users for local or remote deployments;
- cc. Support for multiple browsers (Internet Explorer, Chrome, Firefox, Safari) and viewing platforms including mobile devices with a common user interface yet optimized for each platform. Internet Explorer is the most common in-hospital browser; Safari is needed for Apple Users on their personal PCs, iPads, or iPhones. Additionally, Access does not require an "App" for tablets and phones, unlike the majority of competitive viewers;
- dd. Extreme configurability of the user interface, user preferences and user permissions and privileges. This is important to have the user automatically have all of the right settings without the need to have a "first time user set-up cheat sheet";
- ee. IHE ATNA (Audit Trail and Node Authentication) server logging integration. This is important to larger enterprise to allow centralized

HIPAA audit logging and cross comparison of "bad behavior / unauthorized viewing" and cross correlation to other systems such as the EMR (such as searches for celebrities);

- ff. Availability of other Merge product lines, including cardiology, radiology, eye care, and enterprise archiving products, which is especially important in the IDN and large hospital market who prefer single vendors for integrated products;
- gg. OEM friendly company which enables sales through OEM channel partners such as Allscripts, Orion, Dell/InSiteOne, and others;
- hh. "Trade-up" process from prior generation Merge web viewers such as eMed.Net, Referring Physician Portal, and Reach Portal;
- ii. Multi-lingual and multi-character set support for international markets; and
- jj. Re-brandable user interface to allow branding by our OEM customers such as Allscripts, Orion and others.

22. The ability to view images without the need for downloading software is but one desirable feature of iConnect Access, and it is not the product's most desirable feature.

MERGE'S "HONEYCOMB IMAGE SHARING" PRODUCT

23. Merge's Honeycomb Image Sharing product is a product that delivers image sharing services through the "cloud." Honeycomb Image Sharing

allows users to upload, download, view and share medical images. The viewing of images is only one feature of Honeycomb Image Sharing.

Sales

24. Merge has offered Honeycomb Image Sharing to the public continuously since 2012.

25. Merge does not charge for Honeycomb Image Sharing, and thus has received no gross sales revenue from that product. However, Merge has one commercial image sharing customer,

26. Merge offers Honeycomb Image Sharing in conjunction with other Merge products, including Honeycomb Archive. Honeycomb Archive is an archiving application that enables users to store medical images securely in the cloud and to access them from any location. Many customers use Honeycomb Image Sharing and Honeycomb Archive together, as a package.

27. The total number of Honeycomb Archive sales in 2012 is as follows:

Year	Honeycomb Archive customers	Honeycomb Archive – Gross sales
2012		

Marketing

28. The market in which Merge offers Honeycomb Image Sharing is the market for cloud-based medical image sharing, storing and archiving services ("Cloud-Based Medical Image Sharing Market").

29. The Cloud-Based Medical Image Sharing Market is worldwide, with many vendors other than Merge.

30. The following companies provide Cloud-Based Medical Image services, and based on information that Merge has obtained about the companies, Merge views them as the primary competitors in the Cloud-Based Medical Image Sharing Market:

- a. Iron Mountain, Inc. of Boston, Massachusetts;
- b. Dell, Inc. of Round Rock, Texas;
- c. T & T of Dallas, Texas;
- d. GNax (Global Net Access) of Atlanta, Georgia;
- e. DR Systems;
- f. ScImage;
- g. LifeImage; and
- h. SeeMyRadiology.

31. Based on information acquired about these competitors, my best estimate is that Merge presently accounts for approximately < percent of all users in the Cloud-Based Medical Image Sharing Market.

32. To the best of my knowledge, HIT does not provide a cloud-based image sharing product. Therefore, HIT is not a competitor in the Cloud-Based Medical Image Sharing Market. Accordingly, Merge cannot be said to be taking sales away from HIT.

33. To the best of my knowledge, Merge and HIT have never competed directly with each other to sell Cloud-Based Medical Image services to any individual customer.

Desirability of Features

34. Based on Merge's extensive efforts to determine which features of Honeycomb Image Sharing that Merge customers find most desirable and attractive, I believe that the features which drive sales of Honeycomb Image Sharing include:

- a. User's ability to conveniently share images with anyone they choose;
- b. Easy user management;
- c. Ability to upload DICOM and non-DICOM images and documents;
- d. Diagnostic quality viewing;
- e. Direct upload and download via the Honeycomb gateway to allow DICOM communication with source PACS systems or Merge Enterprise Archive;
- f. Integration with on-site Merge Enterprise Archive acting as copy 1 and Honeycomb as copy 2 of the archive;

- g. Propagation of QC events and image modifications and deletions from the local Honeycomb gateway or Enterprise Archive to Honeycomb;
- h. Secure encrypted SSL transmission of studies and images as well as HL7 messages eliminating the need for VPN tunnels;
- i. HL7 message support including ADT for demographic updates, orders for prefetching and results for reports, ensuring that studies sent to Honeycomb are always updated with the latest demographics and reports without the need for manual user intervention or manipulation;
- j. Encrypted storage in Honeycomb;
- k. Geographically dispersed archiving;
- l. Ability to share archived studies with other users or institutions;
- m. Ability to transparently act as a DICOM archive (directly Query able and Prefetchable) by the local PACS or other archive;
- n. Ability to provide business continuity when the local PACS is unavailable.

35. The ability to view images without the need for downloading software is but one desirable feature of Honeycomb Image Sharing, and it is not the product's most desirable feature.

**HARM THAT MERGE WOULD INCUR IF IT WERE
PROHIBITED FROM SELLING I CONNECT ACCESS
AND HONEYCOMB IMAGE SHARING**

36. I have reviewed the declaration of Dr. Robert Judd, filed in this lawsuit on December 27, 2012. In paragraph 10 of his declaration, Dr. Judd argues that Merge's website lists 36 products and HIT is accusing only two of those products of infringing claim 1 of its '381 Patent; therefore, an injunction to stop Merge from selling those two products "should have little overall effect on Merge's product line." That is not so for various reasons, set forth below.

37. As previously explained, iConnect Access is often sold in conjunction with other Merge products, including iConnect Share, iConnect Enterprise Archive, Merge PACS, Merge RIS, Merge Referring Physician Portal (MRP), and Merge Orthopedics PACS solution (collectively "iConnect products").

38. Similarly, Honeycomb Image Sharing is often offered in conjunction with Honeycomb Archive (collectively "Honeycomb products").

39. Because the products identified in paragraphs 37 and 38 are often bought and used in a package with either iConnect Access or Honeycomb Image Sharing, loss of the ability to offer iConnect Access and Honeycomb Image Sharing would mean that Merge would also lose sales of the other Merge products identified in paragraphs 37 and 38.

40. Sales of the products identified in paragraphs 37 and 38 account for a large share of Merge's total sales revenues, as shown in the following table:

	Gross Sales			
Year	2009	2010	2011	2012
iConnect Access Licenses				
Products sold in conjunction with iConnect Access				
Products sold in conjunction with Honeycomb Image Sharing				
Total iConnect Products and Honeycomb Products Sales				
Total Merge Healthcare Gross Sales	NA	NA		
iConnect Products and Honeycomb Products' share of Merge Healthcare's Total Gross Sales (%)	NM	NM		

41. Based on my education, my business background and particularly upon my familiarity with Merge's operations, all as described in Exhibit 1 and Paragraph 2 above, it is my opinion that if Merge were enjoined from selling iConnect Access and Honeycomb Image Sharing, Merge would have great difficulty maintaining its present sales levels for many of the products identified in paragraphs 37 and 38 above, and that Merge's business would be permanently damaged.

42. Merge's net sales revenue, total assets and shareholder equity in recent years, which are set forth in the Securities and Exchange Commission statement which is Exhibit 7 to Dr. Judd's declaration, are also shown in the table below. The table also shows Merge's earnings before interest, taxes, depreciation

and amortization ("EBITDA") in each year. Merge, like many companies, uses EBITDA as a measure of profitability.

Year	2008	2009	2010	2011
Net Revenue	\$56,735,000	\$66,841,000	\$140,332,000	\$232,428,000
Total Assets	\$54,737,000	\$100,249,000	\$396,645,000	\$459,387,000
EBITDA				
Shareholder Equity	\$8,841,000	\$68,137,000	\$104,806,000	\$92,471,000

43. Based on present information, if Merge were enjoined from selling iConnect Access and Honeycomb Image Sharing for 18 months, Merge would lose in gross sales, equal to _____ of gross sales, that it would otherwise realize.

44. As a result, Merge's projected EBITDA would decrease by _____ equal to _____ percent of the total EBITDA, or profit, that it would otherwise realize in the same period.

45. Such loss in EBITDA would likely cause a loss in share price of Merge Healthcare's common stock as high as _____ per share, or _____ of Merge's share price as of January 18, 2013 (\$2.79).

46. Such a loss, if it were to be mitigated by savings in Merge's operating expenses,

47. I reached the above estimates in the following way:

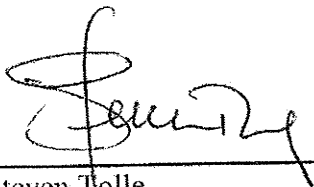
- The main assumptions for the estimation of sales loss in the next 18 months are summarized in following table.

	2012 Actuals	Projected Growth	Loss %	Annual Loss	18 months
	(a)	(b)	(c)	(d) = (a) * (b) * (c)	(e) = (d) * 1.5
iConnect Access License sales					
Products sold in conjunction with iConnect Access					
Products sold in conjunction with Honeycomb Image Sharing					
Total					

- Total healthcare sales for the 18 month period starting on 1/1/2013 were estimated based on the 2013 budgeted sales run-rate for Merge's direct and indirect businesses (i) multiplied by 1.5, for a total of
- Total marginal loss on the projected sales for all iConnect and Honeycomb products is estimated based on the 2012 average marginal EBITDA rate for the above products of
- Loss in share price is estimated based on Merge Healthcare trading Enterprise Value/EBITDA multiple as of January 18th, that is
-

I declare under penalty of perjury that the foregoing is true and correct.

Executed on January 22, 2013.



Steven Tolle